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(54) Speed distance head-up display

(57) A head-up display comprising a small box 1 with a sliding lid 2 affixed to the upper horizontal surface of the instrument panel of a motor vehicle. The sliding lid 2 is graduated 3 in such a manner that when correctly fitted, the graduations 3 are reflected onto the inner surface of the wind-screen immediately in front of the drivers line of vision. These reflected images present constant visual zones equivalent to the safe braking distances in front of the vehicle for the relevent road speed of the vehicle. The sliding lid 2 will allow adjustment of the image position to suit the height of the driver, and to increase or decrease the braking zone to compensate for hazardous road conditions. The graduations may be formed by lenses illuminated by lamps within the box or by LED's selectively illuminated in correspondence to speed to indicate the safe stopping distance at the speed being travelled.

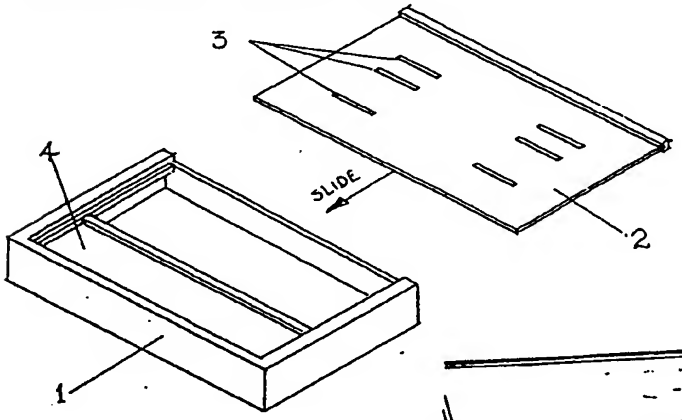

Fig 1

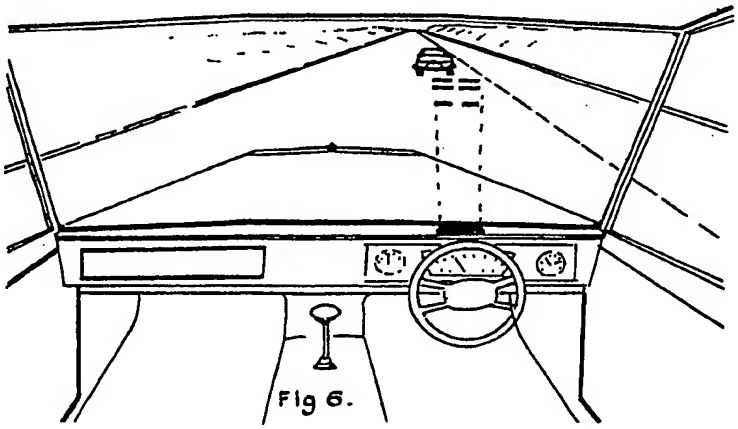

Fig 6.

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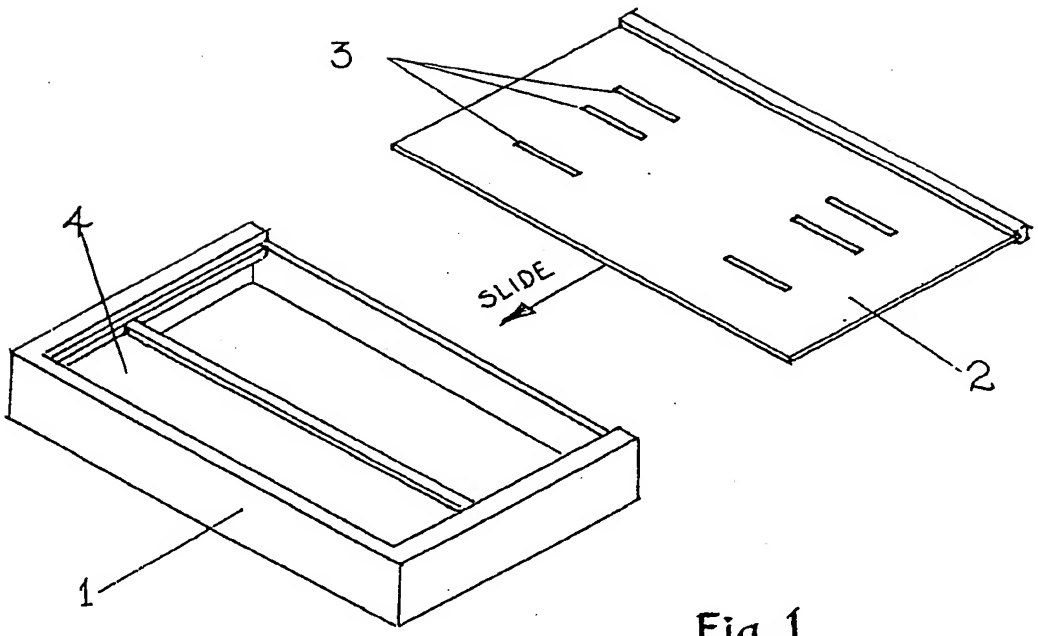

Fig 1

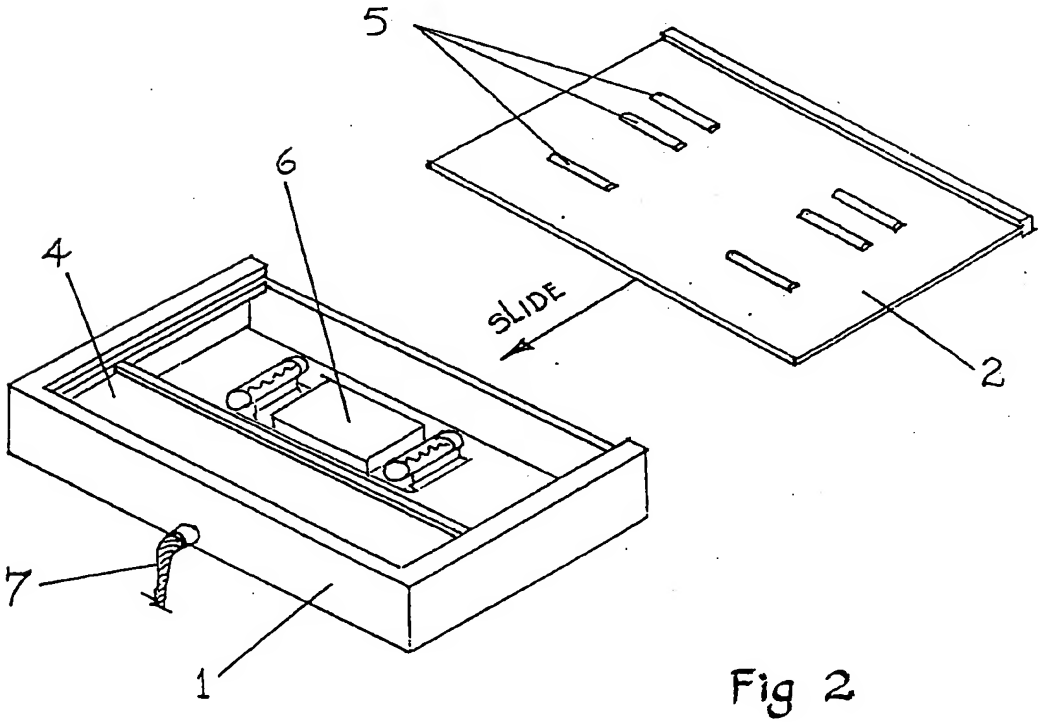

Fig 2

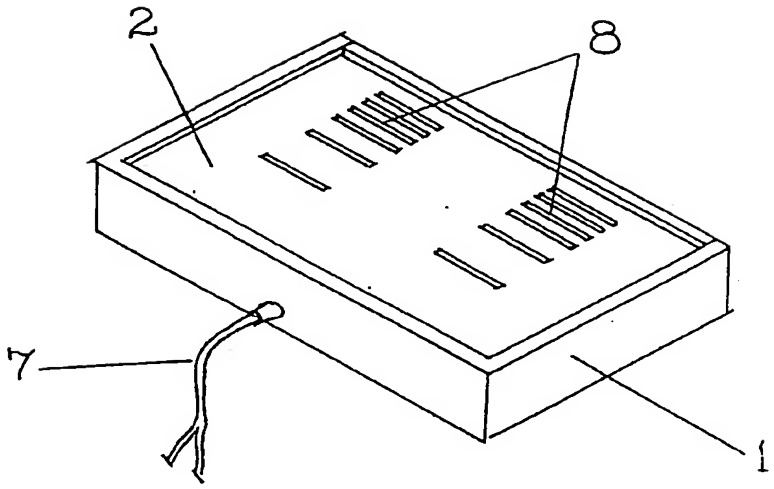

Fig 3.

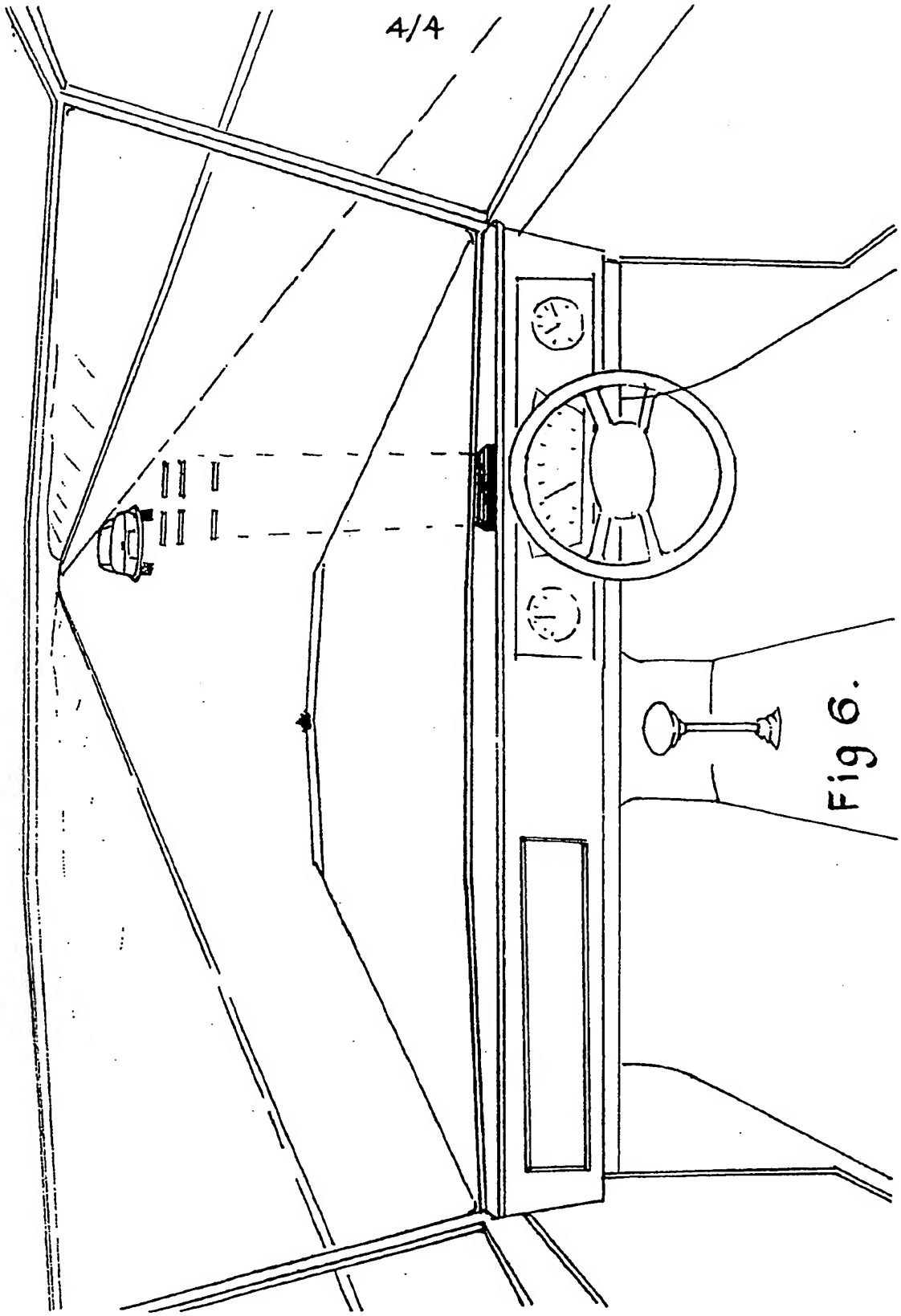

Fig 6.

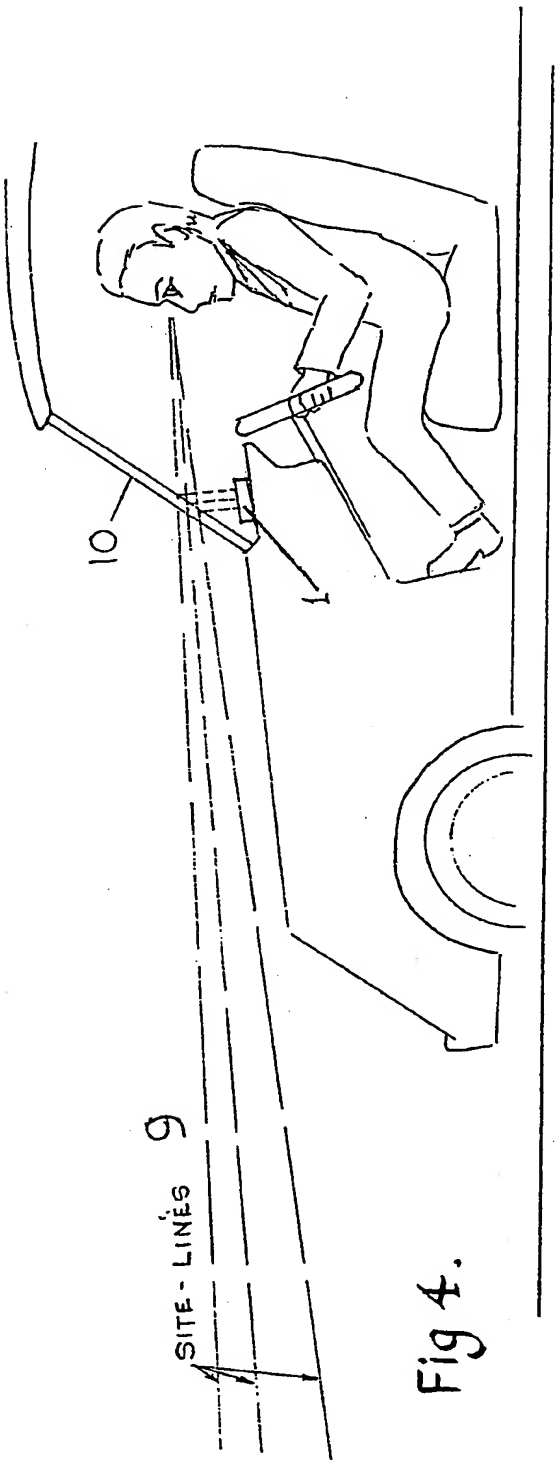

Fig 4.

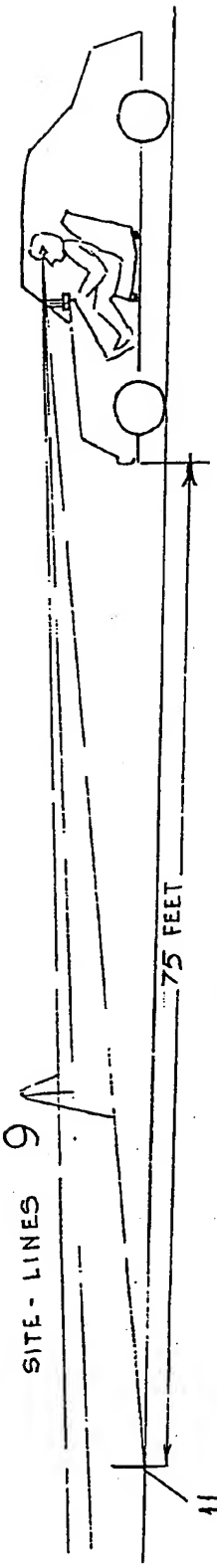

Fig 5.

SPEED/DISTANCE DRIVING SIGHT.

THIS invention relates to a motor vehicle accessory designed to achieve greater road safety.

A large number of road accidents are of the type where one vehicle collides with the rear of the preceding vehicle. Such accidents are usually the result of travelling "too close-too fast". The highway code lays down minimum safe stopping distances for specified speeds.

The problem is, drivers either do not know what these distances are, or cannot remember them, or just ignore them. Constant awareness of these circumstances should greatly reduce such accidents and the resulting injuries and damage.

The object of this invention is to constantly alert drivers to the safe stopping distances of their own vehicle, from any preceding vehicle, for any given speed.

The essential principle of this invention is to create a reflected image onto the inside of a vehicle windscreen directly in front of the drivers line of vision.

The invention comprises of a box approximately 130mm x 80mm x 20mm deep with a sliding lid. The lid is suitably marked to indicate the stopping distances required for road speeds of 30; 50; and 70 miles per hour, as recommended in the highway code.

When correctly fixed onto the upper horizontal surface of the instrument panel of the car, the graduations on the box lid are reflected onto the inner surface of the windscreen in front of the driver. These reflected graduations show as zones of space against the background of the road. If these zones are clear of any vehicle then sufficient stopping distance is available, when travelling at the speed relevant to the zone.

The principle of the image being a reflected one ensures that while presenting the information on the windscreen immediately

-in front of the driver, the reflected image causes no obstruction to the drivers vision, being totally transparant.

The design of the invention allows it to be positioned on the dash or fixed directly to the base of the windscreen allowing adjustment to suit the physical characteristics of individual drivers. Moving the device forward or backward raises or lowers the position of the reflected image on the windscreen, thus allowing correct sight alignment for drivers of any physical height.

Positioning of the device is finalised with the driver sat in his or her normal driving position. The device is located in such a position thatthe reflected image of the 30mph. graduation coincides with the sight-line from the drivers eye to a point on the road surface 23 metres in front of the car.

Thus when travelling at 30mph. no vehicles should be approached close enough for them to appear below the 30mph. graduation, (that is within the graduation zone between the reflected mark and the front of the car.)-the safe stopping distance. When set up as described the 50 & 70mph. graduations will coincide with road distances of 53 metres and 96 metres respectively (i.e. the safe braking distances for those speeds respectively).

The invention fulfills a dual purpose. Not only does it warn a driver he is too close to a preceding vehicle, but also serves to warn him/her, that the speed being travelled at is too fast for the clear stopping space available. (Or alternatively that the speed has not been adjusted to correspond with any speed reduction of the preceding vehicle).

The device provides reliable driver control of the options:-

a) Keep sufficient space in front of own vehicle to suit speed being travelled at.

b) Reduce speed to ensure stopping can be achieved within the clear space remaining between own vehicle and any preceding vehicle.

The sliding lid provides a constant adjustment feature to allow the driver to increase the reflected "safe stopping zone" thereby providing an increased distance when driving in poor or hazardous conditions e.g. fog; heavy rain; or ice.

Sliding the lid partly out of the device, raises the position of the reflected image on the windscreen thereby elevating the sight-line of the driver and effectivelyextending the safe stopping distance to whatever the driver wishes.

The action of sliding out the lid, also exposes an area of high visibility which appears reflected on the windscreen as a high-risk zone, below the 30mph. zone. This zone should be kept 'clear' at all costs,particularly in the hazardous driving conditions which caused the zone to be exposed.

A spcific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Fig.1, shows in perspective, the basic version with the lid withdrawn.

Fig.2, Shows the illuminated model with the lid withdrawn.

Fig.3, Shows the L.E.D. version with the lid closed.

Fig.4, Illustrates the positioning of the driving-sight on the instrument panel and the sight lines through the reflected image.

Fig.5, Illustrates the projected sight lines onto the road surface, and the visual safe stopping area.

Fig.6, Shows the location of the driving-sight on the instrument panel and the drivers view of the reflected image on the windscreen.

Referring to the drawings, the driving sight comprises of a box with a sliding lid 2, The box and the lid have a matt black finish, thus being non-reflective and will not be visible as a reflected image on the windscreen. The sliding lid 2, in Fig.1, is accurately graduated with three pairs of lines 3, using high visibility strips which will be easily seen when reflected onto the inside surface of the windscreen. These lines are positioned on the lid 2, so as to create 30mph; 50mph; and 70mph; zones when the reflected images are observed on the windscreen.

When the lid 2, is in the closed position. only the three pairs of lines will be visible as a reflected image on the windscreen. If the lid 2, is partly opened, the area 4, which has a high visibility surface will be seen as an additional zone reflected on the windscreen, and will serve as a hazard warning and automatically increase the visual stopping distances reflected onto the windscreen.

Fig. 2, shows the driving sight with a built-in illuminating system 6, assembled inside the box 1. The power source for the illumination can be either battery or direct from the vehicle accessory terminals 7. The three pairs of graduated lines are lenses 5, set in the lid 2, to allow the illuminated light to pass through and onto the windscreen, thereby increasing the visibility of the reflected image by day and night.

Fig. 3, shows the L.E.D. version of the driving sight. The lid 2, has the graduations replaced with Light-emitting-diodes 8, positioned to co-incide with graduations representing the stopping distances for speeds of 30; 40; 50; 60; 70;and 80mph. The L.E.Ds, are coupled 7, to the corresponding graduations on the speedometer. This automatically reflects the safe stopping zone onto the windscreen for the speed being registered on the speedometer dial.

Fig. 4, shows the driving sight 1, positioned on the upper surface of the instrument panel of the vehicle. The reflected image appears on the windscreen 10, and the sight-lines from the drivers eye, through the reflected image are shown 9, representing the 30; 50; and 70mph stopping zones.

Fig. 5, shows the extended sight-lines 9, Where the lowest of these coincides with the road surface 11, the distance will be 23 metres in front of the vehicle. This is the safe stopping distance when travelling at 30mph. The other sight-lines will converge with the road surface at 53 and 96 metres respectively. These are the recommended safe stopping distances when travelling at 50mph. and 70mph.

Fig. 6, shows the drivers view of the driving sight when in use. The driving sight box 1, is properly located on the horizontal surface of the instrument panel, directly in front of the driver. The graduations as described are reflected onto the windscreen 10, The driver should ensure he/she never approaches close enough to any preceding vehicle for the reflected zone to encroach onto that vehicle relevent to the speed being travelled at.

CLAIMS

1 A driving-sight comprising a small box with a sliding lid, which can be affixed to the upper horizontal surface of the instrument panel of a moter vehicle. The sliding lid is graduated to project a reflected image of the graduations onto the inside surface of the windscreen immediately in front of the drivers line of vision. When the sight is properly positioned, the reflected image will provide a reference datum for the driver which clearly indicates the safe braking distance in front of the moter vehicle,for the relevent speed of travel.

2 A driving-sight as claimed in Claim 1, wherebye the graduated lid can be partially slid out, toward the driver, therebye adjusting the position of the reflected image to increase the indicated safe braking distance in front of the driver for any relevant speed and/or to compensate for hazardous road conditions.

3 A driving-sight as claimed in claim 1 or claim 2 wherin the exposed internal panel of the box, as a result of sliding the lid partly out, is a high-visibility surface colour, which is reflected onto the windscreen as a braking area to be kept free from encroachment by preceding vehicles at all costs, in hazardous conditions, for example ice, snow, fog.

4 A driving-sight as claimed in claim 1, claim 2, and claim 3, wherein the graduations on the lid comprise inset transparent prisms with an electric light unit inserted beneath the lid to increase the level of visibility and improve night time use of the driving-sight.

5 A driving-sight as claimed in any preceding claim wherein the graduations to the lid are provided by means of a series of "light emitting diodes" positioned to represent the braking distances required at speeds of 30;40;50;60;70;80 miles per hour, and synchronised to the relevent graduations on the speedometer. Thus at a given speed an illuminated reflected image appears in front of the driver. This indicated braking

CLAIMS (cont.)

-zone is automatically extended as the vehicle speed increases.

6 A driving-sight substantially as described herein with reference to figures 1-6 of the accompanying drawings.

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